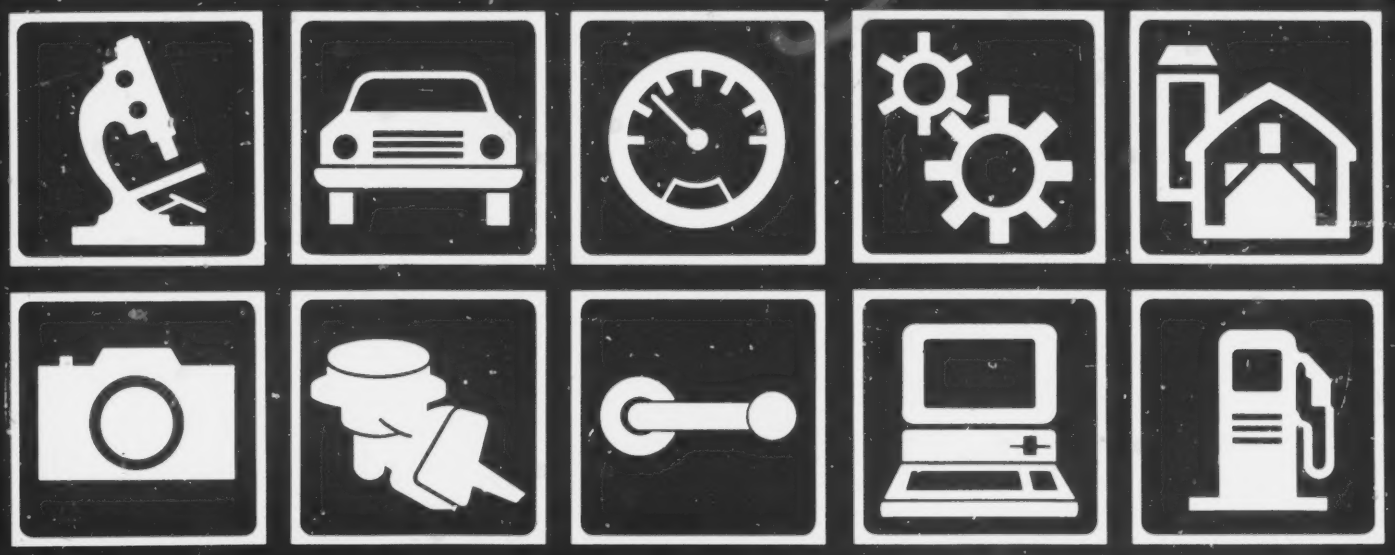

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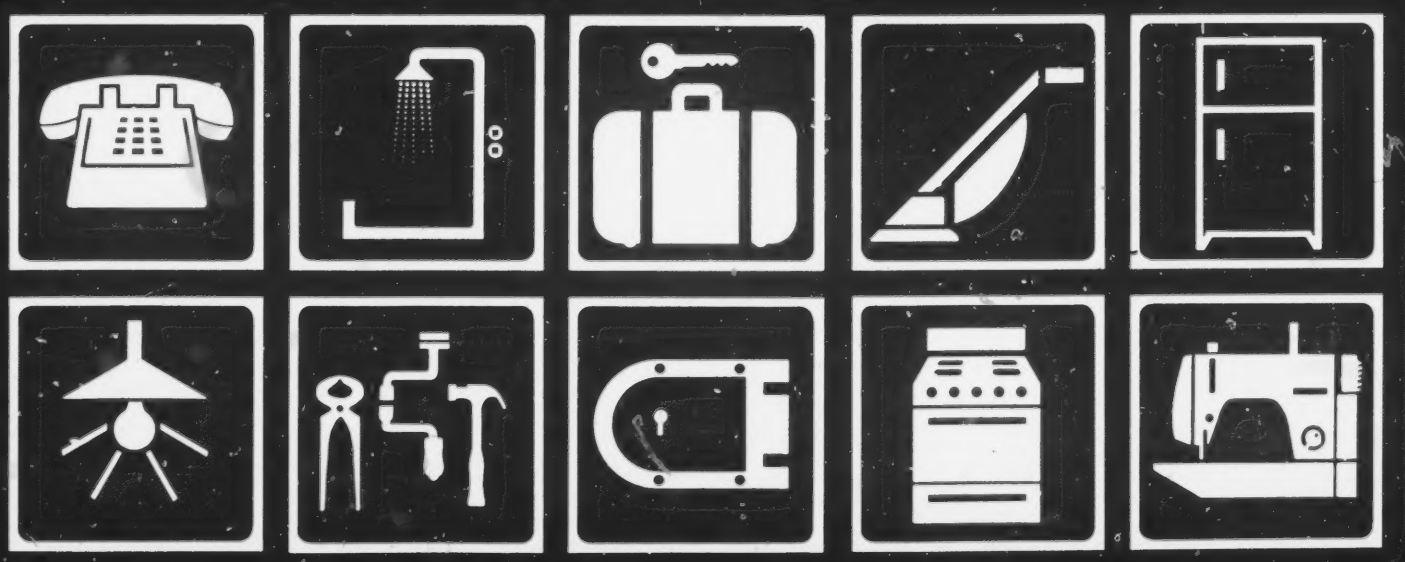
U.S. MARKETS FOR ZINC DIE CASTING 1979-83



U.S. Zinc Die Casting Tonnage

1983	296,863 Tons
1982	266,544 Tons
1981	304,188 Tons
1980	313,807 Tons
1979	382,655 Tons

Table 1
Market-by-Market Analysis (Tonnage)

Automotive Components	1983	100,719 Tons	33.9%
	1982	88,125 Tons	33.1%
	1981	98,712 Tons	32.5%
	1980	103,593 Tons	43.3%
	1979	165,761 Tons	43.3%
Builders Hardware	1983	81,071 Tons	27.3%
	1982	72,057 Tons	27.0%
	1981	79,710 Tons	26.2%
	1980	83,767 Tons	26.7%
	1979	84,543 Tons	22.1%
Electrical Components	1983	36,841 Tons	12.4%
	1982	34,996 Tons	13.1%
	1981	38,427 Tons	12.6%
	1980	41,666 Tons	13.3%
	1979	42,986 Tons	11.2%

Domestic Appliances	1983	26,816 Tons	9.0%
	1982	20,704 Tons	7.8%
	1981	26,897 Tons	8.8%
	1980	25,128 Tons	8.0%
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Industrial, Agricultural and Commercial Machinery	1983	25,755 Tons	8.7%
	1982	21,519 Tons	8.1%
	1981	25,719 Tons	8.5%
	1980	28,014 Tons	8.9%
	1979	29,763 Tons	7.8%
Miscellaneous Industries	1983	11,443 Tons	3.9%
	1982	11,912 Tons	4.5%
(Scale 2:1)	1981	15,465 Tons	5.1%
	1980	12,808 Tons	4.1%
	1979	11,983 Tons	3.1%
Sporting Goods and Toys	1983	7,447 Tons	2.5%
	1982	7,818 Tons	2.9%
(Scale 2:1)	1981	8,663 Tons	2.9%
	1980	10,220 Tons	3.2%
	1979	10,037 Tons	2.6%
Scientific and Professional Equipment	1983	4,131 Tons	1.4%
	1982	6,770 Tons	2.5%
	1981	7,556 Tons	2.4%
(Scale 2:1)	1980	4,642 Tons	1.5%
	1979	6,201 Tons	1.6%
Sound and Television Equipment	1983	2,640 Tons	0.9%
	1982	2,643 Tons	1.0%
	1981	3,038 Tons	1.0%
(Scale 2:1)	1980	3,969 Tons	1.3%
	1979	4,331 Tons	1.2%

U.S. Zinc Die Casters

1983	412 Die Casters
1982	419 Die Casters
1981	428 Die Casters
1980	443 Die Casters
1979	444 Die Casters

Table 2
Market-by-Market Analysis (Die Casters)

Automotive Components	1983	197 Die Casters	48%
	1982	216 Die Casters	52%
	1981	198 Die Casters	46%
	1980	206 Die Casters	47%
	1979	200 Die Casters	45%
Builders Hardware	1983	227 Die Casters	55%
	1982	234 Die Casters	56%
	1981	233 Die Casters	54%
	1980	243 Die Casters	55%
	1979	253 Die Casters	57%
Electrical Components	1983	167 Die Casters	41%
	1982	165 Die Casters	39%
	1981	164 Die Casters	38%
	1980	186 Die Casters	42%
	1979	193 Die Casters	43%

Domestic Appliances	1983	[redacted]	133 Die Casters	32%
	1982		133 Die Casters	32%
	1981		140 Die Casters	33%
	1980		144 Die Casters	33%
	1979		156 Die Casters	35%
Industrial, Agricultural and Commercial Machinery	1983	[redacted]	188 Die Casters	46%
	1982		177 Die Casters	42%
	1981		181 Die Casters	42%
	1980		192 Die Casters	43%
	1979		195 Die Casters	44%
Miscellaneous Industries	1983	[redacted]	118 Die Casters	29%
	1982		111 Die Casters	26%
	1981		118 Die Casters	28%
	1980		116 Die Casters	26%
	1979		114 Die Casters	26%
Sporting Goods and Toys	1983	[redacted]	70 Die Casters	17%
	1982		82 Die Casters	20%
	1981		86 Die Casters	20%
	1980		93 Die Casters	21%
	1979		90 Die Casters	20%
Scientific and Professional Equipment	1983	[redacted]	92 Die Casters	22%
	1982		96 Die Casters	23%
	1981		98 Die Casters	23%
	1980		102 Die Casters	23%
	1979		103 Die Casters	23%
Sound and Television Equipment	1983	[redacted]	57 Die Casters	14%
	1982		51 Die Casters	12%
	1981		65 Die Casters	15%
	1980		76 Die Casters	17%
	1979		76 Die Casters	17%

U.S. Markets for Zinc Die Casting

U.S. zinc die casting consumption took a significant turn for the better in 1983, rising 11.5% over the previous year's total, according to an analytical survey by Zinc Institute (ZI).

Based on figures supplied directly to ZI by the nation's 412 zinc die casters, the survey reports that the component makers utilized 296,863 tons of zinc last year, compared to 266,544 tons in 1982. The 30,319 ton increase is the first rise in U.S. zinc die casting consumption since 1977.

A market-by-market analysis of the results reveals that automotive components led all other end-use categories in both tonnage gains and market share. Die casters who build car parts used 100,719 tons of zinc in 1983, up 14.3% from the 1982 total of 88,125 tons. The result: automotive components accounted for a 33.9% market share, increasing from 33.1% the year before.

As in previous years, the building components placed second with a 27.3% market share—a slight increase over the 1982 figure of 27.0%. The boost was due to a 12.5% gain in zinc consumption from 72,057 to 81,071 tons.

Despite a 5.3% rise in zinc usage, electrical components lost market share, with the percentage dropping from 13.1 to 12.4. The actual tonnage consumed in the category rose from 34,996 tons in 1982 to 36,841 tons last year.

Domestic appliances registered the largest market share gain, climbing from 7.8% to 9.0%. The shift moved the end-use sector from fifth to fourth place on the zinc die casting consumption list, with a total of 26,816 tons deployed in 1983, compared to 20,704 the previous year. The resulting percentage gain was 29.5%, the highest recorded by the survey.

Casters of industrial, agricultural and commercial machinery, who make parts for equipment ranging from computers to combines, also experienced a good year. Although the category slipped from fourth to fifth on the survey list, it registered a 19.7% gain in zinc consumption, from 21,519 to 25,755 tons. Market share rose accordingly from 8.1% to 8.7%.

The four end-use categories which are the traditional back markers in the ZI survey each suffered losses in 1983. Zinc consumption in the miscellaneous industries classification dropped from 11,912 to 11,443, with market share declining from 4.5% to 3.9%.

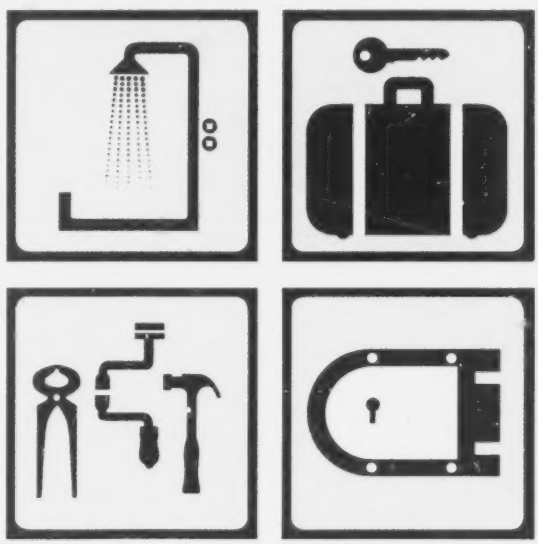
Sporting goods and toys were also weak players, experiencing a market share loss from 2.5% to 2.9%. Reason: a 5% decline in zinc consumption, from 7,818 to 7,447 tons.

The category of scientific and professional equipment recorded the highest consumption drop in the survey, slipping 39% in 1983. The classification went from 6,770 to 4,131, and dropped in market share from 2.5% to 1.4%.

The final end-use sector, sound and television equipment, was relatively stable, losing only three tons from 1982's 2,643 total. Market share declined, however, from 1.0% to 0.9%, due to the dramatic increase in the major end-use categories for zinc die castings.

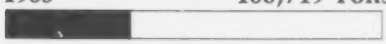
Automotive Components

Builders Hardware



Electrical Components

1983	100,719 Tons	33.9%
1982	88,125 Tons	33.1%
1981	98,712 Tons	32.5%
1980	103,593 Tons	33.0%
1979	165,761 Tons	43.3%



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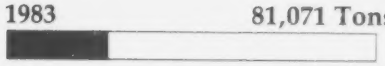
Zinc die castings manufactured for the automotive market at 100,719 tons were 33.9% of total 1983 sales. The rise reflects the rebounding year automakers had in 1983. In addition, ThinWall zinc continued to be an important factor with the introduction of 1984 models in the fall of 1983. The lighter castings increased zinc applications, but also reduced the amount of zinc used in each component. Die casters in this market were 197 in number, 48% of the total.

The market consists of handles and locks, mechanical components, electrical components, body hardware and trim, lamp and lighting fittings, instruments and other automotive components. Pounds of zinc die castings per average car, again reflecting the increased use of ThinWall, dropped from nearly 28 in 1979 to 25 in the 1980 models, 24.2 in the 1981 models, and 23 in 1982. Data for 1983 indicated a stabilization of this market at 22.6 pounds of zinc die castings in the average car. And in 1984 it is estimated that the figure will rise to 23.0 pounds.

1983	81,071 Tons	27.3%
1982	72,057 Tons	27.0%
1981	79,710 Tons	26.2%
1980	83,767 Tons	26.7%
1979	84,543 Tons	22.1%



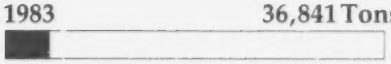
(Scale: 1:2)

Builders hardware, second largest market for zinc at 81,071 tons, took 27.3% of the market. Die casters involved were 227, 55% of the total.

This market's decline appears to have stopped, consuming more than 9,000 additional tons above its 1982 level.

The market covers door and window hardware, locks and keys, furniture and cabinet hardware, hand tools and cutlery, bathroom and plumbing fittings, general hardware, marine hardware, and luggage hardware.

1983	36,841 Tons	12.4%
1982	34,996 Tons	13.1%
1981	38,427 Tons	12.6%
1980	41,666 Tons	13.3%
1979	42,986 Tons	11.2%



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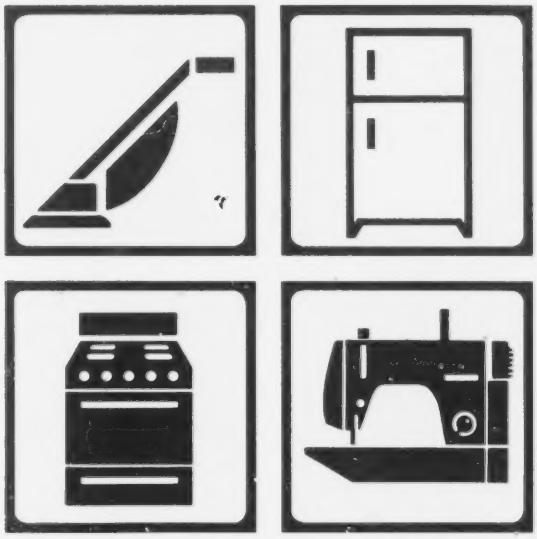
Electrical components reached 36,841 tons for 12.4% of the market and a clear hold on third place among zinc die cast markets. The end-use is shared by 167 die casters, 41% of the producers.

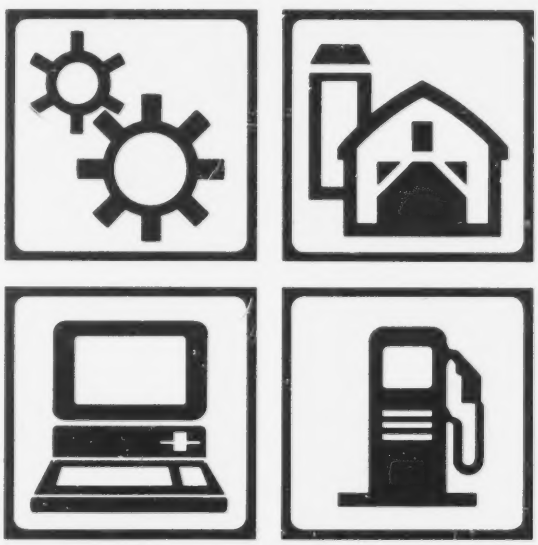
The market includes conduit fittings, switches, plugs and sockets, telecommunication equipment, switch gear, pole-line hardware, motor components, lighting fixtures and equipment.

This industrially oriented market, which is more stable than consumer goods, is nevertheless strongly affected by construction, particularly in the residential housing sector.

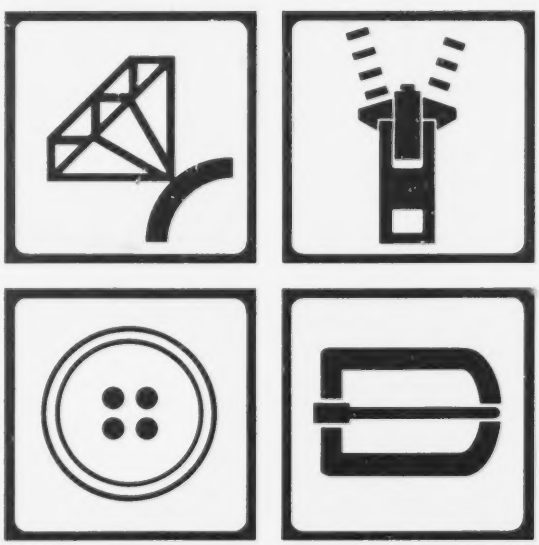
Domestic Appliances



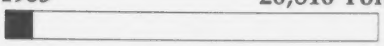
Industrial, Agricultural and Commercial Machinery



Miscellaneous Industries



1983	26,816 Tons	9.0%
1982	20,704 Tons	7.8%
1981	26,897 Tons	8.8%
1980	25,128 Tons	8.0%
1979	27,051 Tons	7.1%



(Scale: 1:2)

This market at 26,816 tons, 9.0%, moved back up to fourth place in 1983. The number of die casters, 133 or 32%, remained constant.

The market includes vacuum cleaners, floor polishers, refrigerators and freezers, ranges, washing machines and dryers, dishwashers, small appliances, heating appliances, room air conditioners, fans and sewing-machine components.

1983	25,755 Tons	8.7%
1982	21,519 Tons	8.1%
1981	25,719 Tons	8.3%
1980	28,014 Tons	8.9%
1979	29,763 Tons	7.8%

(Scale: 1:2)

This category dropped back to fifth place in 1983 despite an upsurge of over 4,000 tons. Industrial, agricultural and commercial machinery accounted for 25,755 tons and 8.7% of the total. 188 die casters, 46%, were in this market.

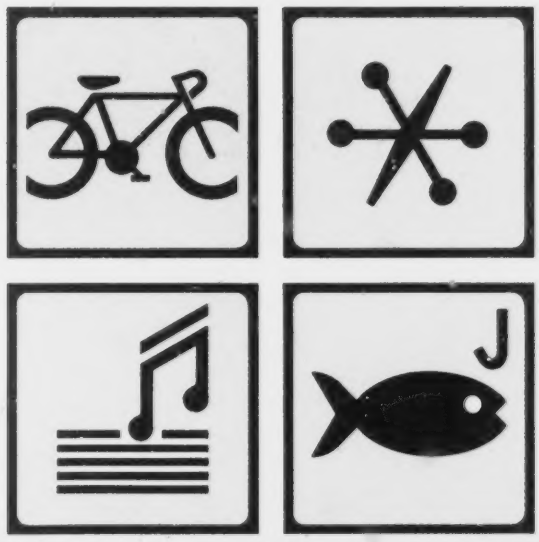
The end-use segment includes copying equipment, computers, office equipment, business machines, agricultural and food machinery, vending machines, machine tools, power tools, central heating and air conditioning, power-operated garden equipment, lawn mowers, snow blowers and gasoline service station equipment.

1983	11,443 Tons	3.9%
1982	11,914 Tons	4.5%
1981	15,465 Tons	5.1%
1980	12,808 Tons	4.1%
1979	11,983 Tons	3.1%

(Scale: 2:1)

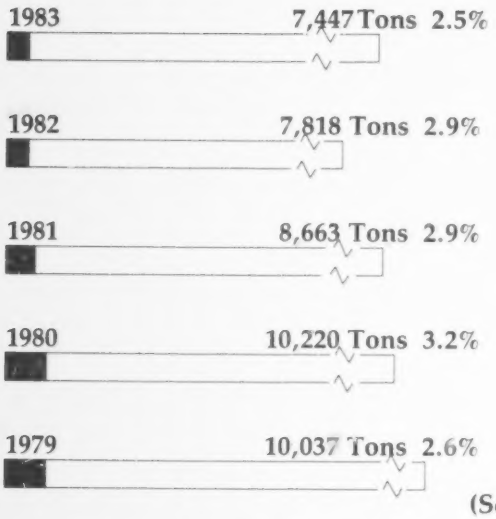
Markets named by relatively few die casters were arbitrarily grouped here. The category decreased about 400 tons in 1983 to 11,443, or 3.9% of the total. A total of 118 die casters, 29% of them, reported in this category which sold to markets such as tableware, jewelry and ornaments, fancy goods and souvenirs, zippers, buttons and buckles. This was zinc's sixth largest market for 1983.

Sporting Goods and Toys



Scientific and
Professional Equipment

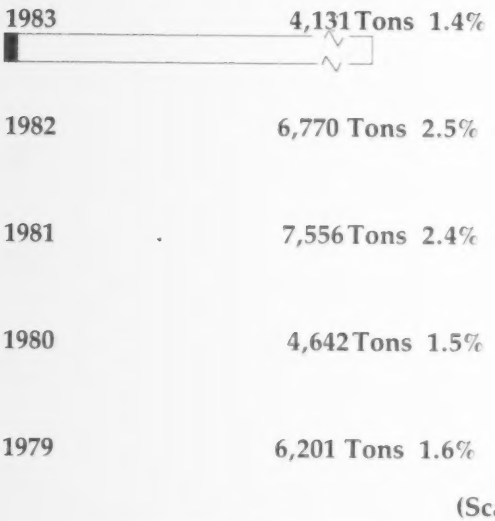
Sound and Television
Equipment



(Scale: 2:1)

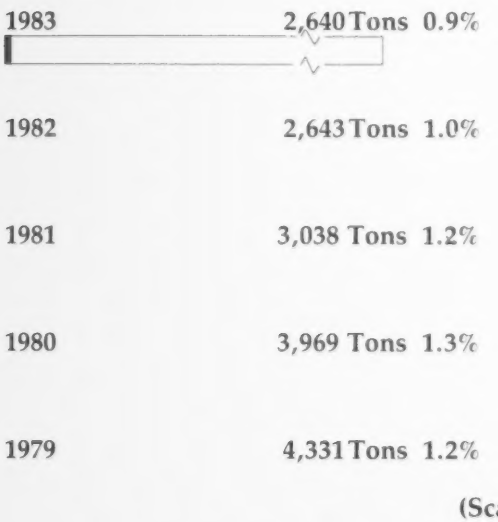
Zinc's die casting production in this category decreased to 7,447 tons, or 2.5% of the total market, remaining in seventh place. Seventy die casters, or 17%, participated.

The market consists of toys, musical instruments, and sporting goods.



(Scale: 2:1)

At 4,131 tons, or 1.4% in 1983, this market decreased by over 2,000 tons from the 6,770 tons recorded in 1982. A total of 92 die casters, 22% of the market, sold to makers of valves, scientific instruments, timing devices, cameras and projectors and optical instruments. This was zinc's eighth largest market for 1983.



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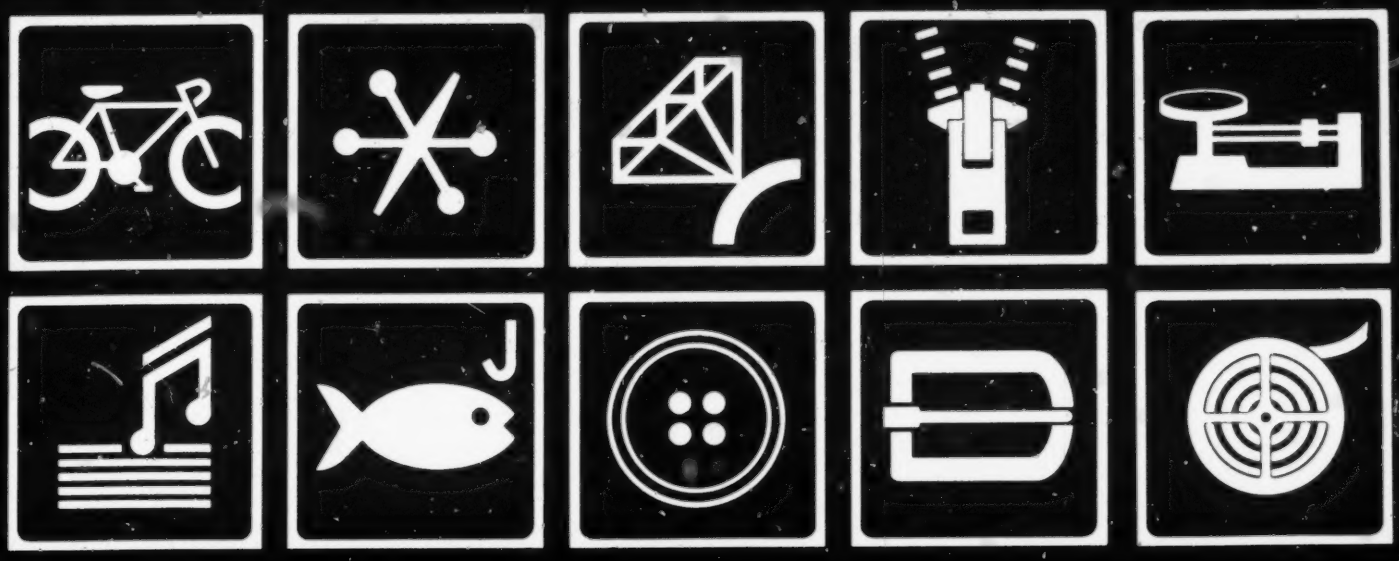
With 2,640 tons and 0.9% of the market, these consumer-oriented products dropped slightly in 1983. Fifth-seven die casters, 14%, were involved in this market area. It consists of assemblies and parts for radio, television, record and tape players. This was zinc's ninth largest-market for 1983.

Its continuing decline can be attributed to increased foreign imports in the electronics sector.



While every effort has been made to assure that the information given in this booklet is technically correct, Zinc Institute, Inc. does not warrant its accuracy.

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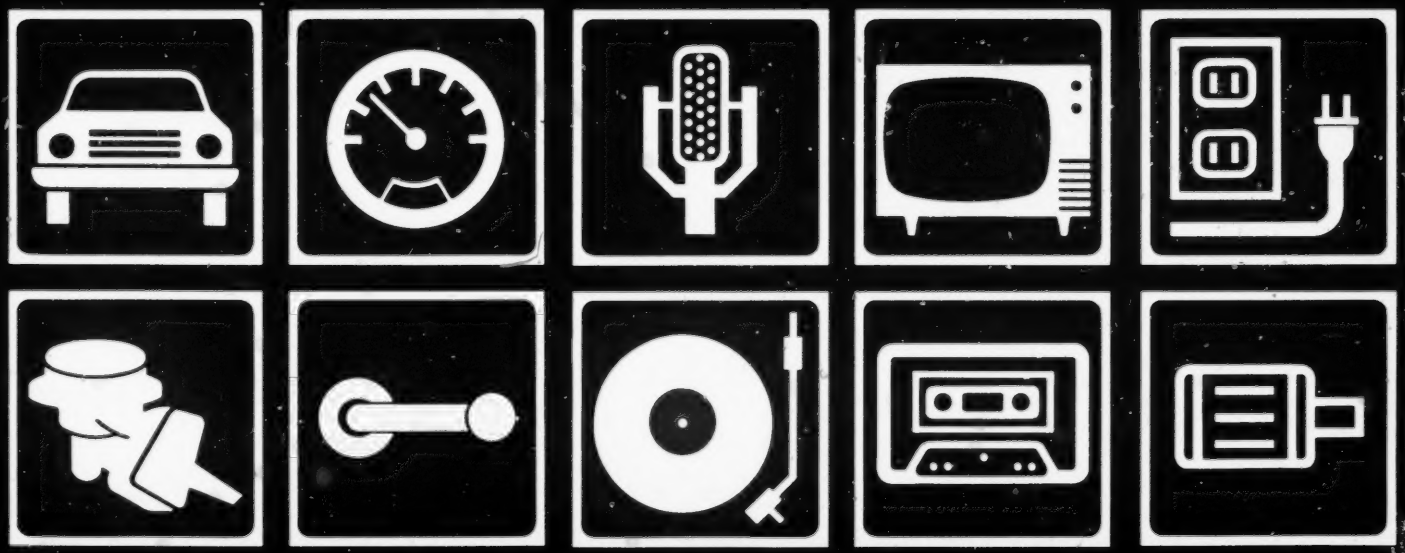

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